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10/590,245

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EXAMINER

LIU, LI

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/590,245	Applicant(s) TAKADA, JUN	
	Examiner LI LIU	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 22-25, 38-41, 46-58, 71-75, 84 and 85 is/are pending in the application.
- 4a) Of the above claim(s) 22-25, 38-41 and 46-49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 50-58, 71-75, 84 and 85 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/22/2006, 1/3/2008</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species I (claims 1-8, 50-58, 71-75, and 85-85), and cancellation of claims 9-21, 26-37, 42-45, 59-70, and 76-83 in the reply filed on 02/23/2009 is acknowledged.

Claims 22-25, 38-41, and 46-49 are withdrawn from consideration.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 8/22/2006, 1/3/2008 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

4. Claims 5-8 and 53 are objected to because of the following informalities:

Claims 5-8 and 53 each recites the limitation "each component below each coefficient" or "each coefficient below each component". It is not clear what does it mean by "below". "Below" could mean lower rank, lower value, come after, etc.

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Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

6. Claims 74, 75 and 84 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Each of the claims 74, 75 and 84 defines a **program** embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory for that reason (i.e., "When

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functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" - Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on "computer- readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Note:

A "signal" (or equivalent) embodying functional descriptive material is neither a process ,nor a product (i.e., a tangible "thing") and therefore does not fall within one of the four statutory classes of § 101. Rather, "signal" is a form of energy, in the absence of any physical structure or tangible material.

Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a "signal", the claim as a whole would be non-statutory. In the case where the specification defines the computer readable medium or memory as statutory tangible products such as a hard drive, ROM, RAM, etc, as well as a non-statutory entity such as a "signal", "carrier wave", or "transmission medium", the examiner suggests amending the claim to

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include the disclosed tangible computer readable media, while at the same time excluding the intangible media such as signals, carrier waves, etc.

7. Claims 1-8 and 50-54 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 1-8 and 50-54 are drawn to **encoding or decoding device**. Normally, the claims would be statutory. However, the specification at page 64 (lines 16-18) also defines the claimed device as **computer programs**. Computer software is non-statutory subject matter.

Because the full scope of each of the claims as properly read in light of the disclosure appears to encompass non-statutory subject matter, the claim as a whole is non-statutory. Any amendment to the claims should be commensurate with its corresponding disclosure.

8. Claims 55-58 and 71-73 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. The Federal Circuit (*In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008)), relying upon Supreme Court precedent (*Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876)), has indicated that a statutory “process” under 35 U.S.C. 101 must (1) be tied to a particular machine or apparatus, or (2) transform a particular article to a different state or thing. This is referred to as the “machine or transformation test”, whereby the recitation of a particular machine or transformation of an article must

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impose meaningful limits on the claim's scope to impart patent-eligibility (See *Benson*, 409 U.S. at 71-72), and the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity (See *Flook*, 437 U.S. at 590"). While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform an article nor are positively tied to a particular machine that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

Instant claims 55-58 and 71-73 each recite a process that fails to specify structure that is significant to the basic inventive concept. That is, the "particular machine" tasked with extracting and arranging coefficients is not recited. Hence, none of claims 55-58 and 71-73 are tied-to a particular machine, and so fail the "machine" prong of the "machine-or- transformation" test.

Furthermore, "an article" is not transformed into a different state or thing by any of the steps of claims 55-58 and 71-73. Instant claims 55-58 and 71-73 fail to recite "real world" data and fail to depict the transformed image as an external representation of a physical object. Hence, each of claims 55-58 and 71-73 also fail the "transformation" prong of the "machine-or-transformation" test.

Any amendment to the claims should be commensurate with its corresponding disclosure.

For a more detailed explanation of this or other Office policy, Applicants may refer to the Office of Patent Legal Administration (OPLA):

(571) 272-7701 - General patent examination legal and policy guidance

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 4, 6, 58, 75 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsuura et al. (hereafter referred to as “Matsuura”, US 6788811 B1).

Regarding claim 4, Matsuura discloses an encoding device (**Matsuura, Figs. 1&2**) characterized by comprising:

element extracting means for sequentially extracting $2m \times 2$ (m is an integer: $m \geq 1$) spatially adjacent elements from a two-dimensional signal (**Matsuura, col. 9, lines 62-63**);

wavelet transforming means for dividing the $2m \times 2$ elements into a plurality of subband coefficient sets (**Matsuura, Fig. 2, units 504-506, and Fig. 3**);

coefficient encoding means for encoding the coefficient sets (**Matsuura, Fig. 2, unit 511**); and

code output means for rearranging the encoded coefficient sets in order from a low-resolution subband, and outputting the rearranged coefficient sets (**Matsuura, Fig. 2, unit 511, and Fig. 10**).

Regarding claim 6, Matsuura discloses an encoding device according to claim 4, characterized in that

each coefficient comprises a plurality of components (**Matsuura, Fig. 2, components Y, U, V**), and

said coefficient encoding means encodes each component of a coefficient, and generates a code by concatenating a code of each component below each coefficient (**Matsuura, Fig. 2, unit 511, and Fig. 10**).

Regarding method claim 58 and program claim 75, the limitations of the claims are rejected for the same reasons as set forth in the rejection of claim 4 above.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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12. Claims 1-3, 5, 50-57, 71-74, 84, and 85 are rejected under 35

U.S.C. 103(a) as being unpatentable over Matsuura (US 6788811 B1), in view of Matsumura et al. (hereafter referred to as 'Matsumura', "Wavelet image coding using power adaptive vector quantization", Proc. Picture Coding Symposium (PCSJ95), October 1995, pages 121 to 122, Abstract, -- IDS).

Regarding claim 1, Matsuura discloses an encoding device (**Matsuura, Figs. 1&2**) characterized by comprising:

wavelet transforming means for dividing a two-dimensional signal into subbands as a plurality of frequency regions (**Matsuura, Fig. 2, units 504-506, and col. 10, lines 51-56**);

Matsuura does not specifically disclose extracting sets of coefficients which belong to the same spatial position from a plurality of subbands of the same decomposition level.

Matsumura, in the same field of endeavor, discloses a wavelet coding method wherein sets of coefficients (**Matsumura, Fig. 1, 12 dimensional vectors**) are extracted for every predetermined number of sets of coefficients which belong to the same spatial position from a plurality of subbands (**subbands H1, V1, and D1**) which belong to a wavelet decomposition level of the same hierarchy (**H1, V1, and D1 all belong to first level**); and

It would have been obvious to one of ordinary skill in the art at the time of the invention to include Matsumura's coefficients extracting (vector generating) method in Matsuura's coding device, since the claimed invention is merely a

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combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

Regarding claim 2, the combination of Matsuura and Matsumura discloses an encoding device according to claim 1, characterized in that said coefficient extracting means sequentially (**Matsumura, Fig. 1, H1, then V1, then D1**) extracts a predetermined number of coefficient sets at a time (**4 coefficients from each subband**) in a scan line direction of the two-dimensional signal (**Matsumura, Fig. 1, 12 dimensional vectors**).

Regarding claim 3, the combination of Matsuura and Matsumura discloses an encoding device according to claim 1, characterized in that said coefficient extracting means sequentially extracts coefficient sets (**4 coefficients in each set**) one by one (**Matsumura, Fig. 1, H1, then V1, then D1**).

Regarding claim 5, the combination of Matsuura and Matsumura discloses an encoding device according to claim 1, characterized in that each coefficient comprises a plurality of components (**Matsuura, Fig. 2, components Y, U, V**), and

said coefficient encoding means encodes each component of a coefficient, and generates a code by concatenating a code of each component below each coefficient (**Matsuura, Fig. 2, unit 511, and Fig. 10**).

Regarding device claims 50-54, they are the corresponding decoding device of claims 1-3 and 5. It would have been obvious to one having ordinary skill in the art at the time the invention was made to reverse the encoding procedure to get the original image. A mere reversal of the coding process is held involving only routine skill in the art.

Regarding method claims 55-57, the limitations of the claims are rejected for the same reasons as set forth in the rejection of claims 1-3 above, respectively.

Regarding method claims 71-73, they are the corresponding decoding methods of claims 50-52. The limitations of the claims are rejected for the same reasons as set forth in the rejection of claims 50-52 above, respectively.

Regarding program claim 74, the limitations of the claim are rejected for the same reasons as set forth in the rejection of claim 1 above.

Regarding program claim 84, which is the corresponding decoding program of claim 50. The limitations of the claim are rejected for the same reasons as set forth in the rejection of claim 50 above.

Regarding claim 85, which combines the limitations of the encoding device of claim 1 with the limitations of decoding device of claim 50, and is therefore rejected for the same reasons as set forth in the rejection of claims 1 and 50 above. Although neither Matsuura nor Matsumura expressly discloses displaying received image, the Examiner takes Official Notice to note that displaying received image on a display such as computer monitor is well known and expected in the image processing arts and would have been obvious to incorporate into the device of Matsuura in view of Matsumura.

13. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura (US 6788811 B1) and Matsumura ("Wavelet image coding using power adaptive vector quantization") as applied to claim 1, and further in view of Okada et al. (hereafter referred to as 'Okada', US 7120306 B2).

Regarding claim 7, the combination of Matsuura and Matsumura discloses an encoding device according to claim 1, characterized in that each coefficient comprises a plurality of components (**Matsuura, Fig. 2, components Y, U, V**), and said coefficient encoding means encodes each component of a coefficient (**Matsuura, Fig. 2, unit 511, and Fig. 10**). The Matsuura and Matsumura

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combination does not expressly disclose generating a code by concatenating a code of each component below each coefficient.

Okada, in the same field of endeavor, discloses an image coding method wherein a code is generated by concatenating a code of each component below each coefficient (**Okada, Fig. 3**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Okada's coding method in the coding device of Matsuura and Matsumura, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

14. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura (US 6788811 B1), in view of Okada (US 7120306 B2).

Regarding claim 8, Matsuura discloses an encoding device according to claim 4, characterized in that each coefficient comprises a plurality of components (**Matsuura, Fig. 2, components Y, U, V**), and said coefficient encoding means encodes each component of a coefficient (**Matsuura, Fig. 2, unit 511, and Fig. 10**). Matsuura does not expressly disclose generating a code by concatenating a code of each component below each coefficient.

Okada, in the same field of endeavor, discloses an image coding method wherein a code is generated by concatenating a code of each component below each coefficient (**Okada, Fig. 3**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Okada's coding method in the coding device of Matsuura, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Miyazawa, Toshio et al. (US 20050036701 A1): image processing apparatus and computer-readable storage medium.

Sano, Yutaka et al. (US 20030169935 A1): image decompression apparatus and method.

ACHARYA, TINKU et al. (US 20030108247 A1): wavelet zerotree coding of ordered bits.

Pesquet-Popescu, Beatrice (US 20020009233 A1): color encoding and decoding method.

Lindquist; Timothy John (US 6801667 B1): method and apparatus for re-ordering of a bit stream.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LI LIU whose telephone number is (571)270-5363. The examiner can normally be reached on Monday-Thursday, 7:00AM-4:30PM, ALT. Fridays, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed, can be reached on (571)272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

L.L.

/Samir A. Ahmed/

Supervisory Patent Examiner, Art Unit 2624